

Perchlorate - January 1999

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EPA has been working collaboratively with states, other federal agencies and the private sector to address a recently discovered threat to water supply from a component of solid rocket fuel. Perchlorate, ClO_4^- , could not be detected in low concentrations until 1997 and relatively little was known about potential health effects, how to remove it from water or even how widespread the chemical occurs in the environment. Within the last two years, this chemical has been found in the water supply of over 15 million people in the US. In an extraordinary cooperative effort, an ambitious research agenda to determine effects on adults and children was designed and carried out, and the results are currently being reviewed by expert scientists outside the government. The same sense of collaboration and urgency is bringing together all levels of government and private enterprise to protect the water resources of the country from perchlorate.

The proposed reference dose in the draft report is .0009 mg/kg-day. If the standard adult model is used to translate this into a drinking water level (70 kg, 2 liters per day), the result is 32 ppb. However, the revised RfD is based on thyroid effects seen in 5-day-old rats, and apparently other studies show that developing organisms are also more sensitive to perchlorate. So in addition to discussing whether we have the right Lowest Observed Adverse Effect Level, and that we applied the proper uncertainty factors (100-fold), there are critical policy implications over choosing the right exposure model. A 4 kg (8.8 pound) infant drinks about 0.64 l (22 ounces) per day. This exposure model would correspond to a drinking water concentration of about 6 ppb.

The current Action Level in CA is 18 ppb for perchlorate, and most other states have accepted this level as safe although no others have formally adopted an action level.

The MWD intake water at Lake Havasu has averaged 6 ppb for the last two years (range 5 to 9 ppb). Arizona's CAP also takes water from Lake Havasu. Las Vegas's intake water ranges from < 4 ppb to 16 ppb, and for much of the year the perchlorate level is about 10 ppb.

In California, 144 public water supply wells have perchlorate above 4 ppb. Only 38 public supply wells have detectable MTBE in California, according to Cal DHS information.

10 superfund sites in CA and AZ have perchlorate in the groundwater; we know of 18 separate releases of perchlorate to the environment in Region 9 affecting 3 states, 11 tribes and perhaps Mexico